FINA   160

User's Manual

Version 1.0

Thank you very much for purchasing our printer

◆ In order to use this printer correctly and safely and understand this product's capability, please read this manual carefully.

◆ The manual includes equipment structure, description, technical parameters, operation manual, safety information and application of software, etc.

◆ This manual is subject to change without notice.

◆ Contents here in contained are believed to be correct, however, please contact us if you find any error or something not clear enough.

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Version 1.0

December 2006

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Chapter 1 Safety information

Before use your FINA 160 Inkjet Digital Printer （Hereafter refer to printer）, please read following safety information. Pay attention to the cautions on the Printer.

1.1 Safety precautions

◆ **Install over-current and over-voltage facility for printer power.** Failure to follow this guide could result in electric shock, personnel injury and fire.

◆ **Clean the ink channels with solution matching to the used ink.** Failure to follow this guide could result in filter clog and ink channel blockage.

◆ **Besides the ground-line for power, another unattached ground-line should be connected outdoor.** Failure to follow this guide could result in abnormal work status of printer.

◆ **Static prevent facility should be settled on the carpet or in dry climate.** Failure to follow this guide could result in print head or other parts damage on the printer.

◆ **Waiting for 10 minutes at least after power off to transport, connect and check the printer.** Failure to follow this guide could result in electric shock.

◆ **Printer should be settled on flat floor and be adjusted horizontally.** Failure to follow this guide could reduce the print resolution.

◆ **Clean the print head and ink channel with solution after long-time printing.** Failure to follow this guide could result in print head damage and ink channel clog.

◆ **Never put hands on depend fence while the printer is working.** Failure to follow this guide could result in hand crushing.

◆ **Never put hands into the heating board while the board is heating.** Failure to follow this guide could result in hand scald.

◆ **Never put hands on rotating rollers while the printer is working.** Failure to follow this guide could result in hand crushing.

◆ **Don't open the electric tank in normal condition.** Failure to follow this guide could result in electric shock.

1.2 Important Safety Information

• Do not block the hole on the cover.

• Do not insert any object into the Printer groove. Don't let any kind of liquid splash into Printer.

• Only use the power supply according to the label. You may choose either AC 110V or 220V for different countries and regions.

• Connect all the equipment to a properly grounded socket. Avoid the socket in the same circuit with copy machine or air conditioner.

• Avoid to using the socket controlled by the wall switch or by auto timer.

• Please keep Printer away from the latent source of electromagnetic disturbance. For example, loudspeaker or wireless phone.

• If you use additional cable, please make sure that total amperage of the equipment connecting with cable shall not exceed the amperage of the power supply. Moreover, the amperage of all equipment connecting with wall socket does not exceed the amperage of the wall socket.

- Do not use damaged Electrical Power wire.
- Do not repair Printer by yourself.
- Shut off the power and ask experienced technician for help, if the following situations occur:

  Power cable or plug is damaged.

  Liquid splashes into printer.

  Printer falls down or broken.

  Printer cannot work properly or change in property.

1.3 Caution When Using Printer

- Don't use your hand to move print head; otherwise the printer will be damaged.
- Always use power switch to turn On/off the printer. Before shutting down the Printer, do not pull out Power Supply wire or Data Wire.
- Before moving the printer, please make sure the print head is fixed at original position.

1.4 Guide When Using Ink Cartridge

- Keep ink away from children. Do not let the children drink or touch.
- If ink spills on the skin, please wash with soap and water. If ink splashes into eye, please wash with water immediately
- Do not shake the ink cartridge in case ink leak is caused.
- Please keep surrounding clean when you replace a new ink container. It helps you improve printing quality.

1.5 Choosing Printer Installation Place

- Put printer at a horizontal and stable place with enough space; otherwise, the Printer may not work properly.
- Don't leave Printer at a place where temperature and humidity change severely. Avoid direct sunlight, strong light or heat.
- Avoid shaking or vibrating.
- Keep sufficient room around printer for air circulation.
- Place printer nearby the wall socket, so that it is easy to connect or disconnect the power supply.

1.6 Warning, Caution and Attention

Warning

Must obey in order to ensure personal safety.

Caution

Must obey in order to protect the machine.

Attention

Contain some important and useful information about operation.

Chapter 2 Technical Parameters

Chart 2-1 Printer Outlook

Product Model	FINA 160	
Print Technique	Xaar 126 300/ 35pl piezo head, 8 heads inside	
Resolution	360dpi, 720dpi, 1440dpi	
Max Media Width	1626mm	
Max Printing Width	1600mm	
Min Printing Size	A4 or 210mm	
Output (m²/h) （Designed values, not from measurement）	Mode	Output (m²/h)
	360*360 dpi	24.34
	360*720 dpi	12.63
	720*720dpi	6.32
	720*1440dpi	3.62

Display	LCD display with 8 key panel, self-diagnosis available
Ink Type	Environment-protective and Solvent-base ink：C, M, Y, K
Ink Supply Mode	300ml/min auto ink supply by electric pump，volume of main tank 1000ml/color
Ink Inspection System	Auto/manual ink supply, low ink detector
Printing Driver	Support many RIP drivers
Operation Platforms	Multi-operation platforms (Window2000, XP, etc.)
Media Type	Flex, vinyl, window film, polyester, etc.
Media Transmission	Roll media or sheet media (bigger than A4 or 210mm)
Media Processing	Auto feeding system, weight less than 25kg/roll
Print head Height	2mm-4mm above media adjustable
Pre-heater & Dry System	Auto heating after electrifying, the tiptop temperature is about 55°C
Clamp	Manual adjustment media width
Print head Cleaning System	Manual positive pressure cleaning
Safety System	Inside safety lock with auto shutting down function
Print Interface	USB2.0 interface (Window2000、NT、XP etc)
Noise	Printing status≤60dB / Waiting status≤40dB (ISO7779)
Printer Size （including ink tank） / Net Weight	L2530mm * W750mm * H760mm / 180Kg
Package Size / Weight	L2590mm * W790mm * H1120mm / 220Kg
Input Voltage	AC220V / 50Hz, AC110V / 60Hz optional
Voltage for the Feeding and Cleaning System	AC220V / 50Hz, AC110V / 60Hz optional
Power（AC 220V applied）	1400W
Working Environment	Temperature：20°C ~ 30°C Humidity：40% ~ 80%

The parameters above are subject to change without notice.

Chapter 3 Equipment Assembly and Adjustment

3.1 Assemble Printer

The whole packaging equipment is easy to assembly.

1. Please assemble supporter to a horizontal, clean and proper work area, tighten all screws on the supporter to insure safety and stability;
2. Put main ink tanks to main ink tank frame on the right side. Make sure to connect ink pipe to correct ink holes;
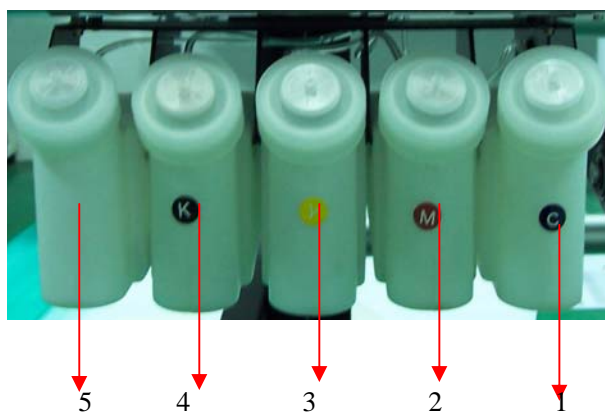
1— Main ink tank C
2— Main ink tank M
3— Main ink tank Y
4— Main ink tank K
5— Flush solution tank
Figure 3-1 Main ink tanks

3. Fixing Xaar 126 300/35 print head on supporter

Chart 3-2 Print head frame

Method and Steps:
    a. Insert Xaar126 300/35 print head to the print head frame downwards at first.
    b. Insert the print head fixing dowel to the corresponding dowel hole for fixing print head.
    c. Put the 2 screws with the Xaar126 300/35 print head on screw holes, which is on the upper and nether middle part of the frame.
    d. Tighten the 2 screws and draw the fixing dowel out of the frame.

4. Please connect all power cables correctly.
    Insert one end of data cable on the PH commutation board to the slot of PH control board, and the other end of data cable is inserted to the print head. The connection planting order of PH commutation board lists as below:
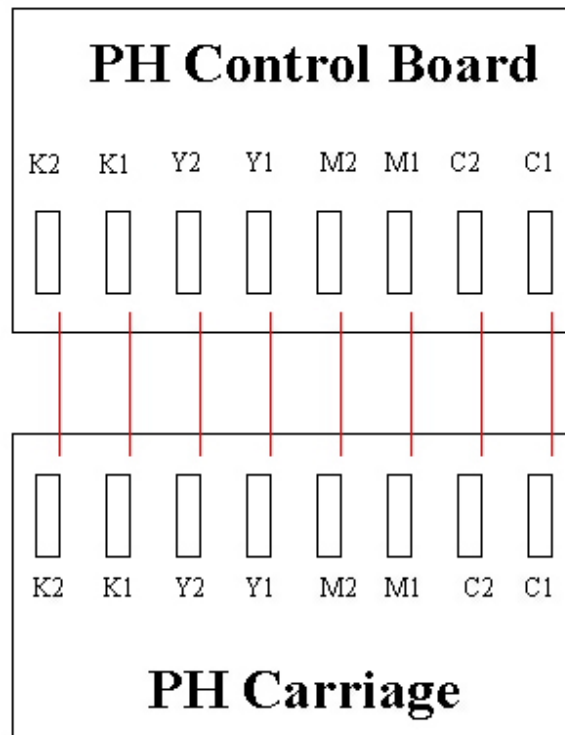
Chart 3-3 Connection of print head commutation board

5. Connect all the signal cables and power lines correctly.
6. Install Rip software on the computer.

3.2 Attention before Turning on the printer

1. In order to clean print head easily, please prepare following items:
   - Flush solution
   - Non-woven fabric.

2. In order to inspect temperature and humidity of printing environment, please prepare relative measurers. Requirement for environment:
   - Temperature: 20°C - 30°C
   - Humidity: 40% - 80%

3. Power supply
   - You may select AC 110V or 220V for different countries or regions.
   - Control power supply: AC 100 - 240V   50/60HZ
   - Heating power supply: AC 100 / 240V 50/60HZ (AC 100 V optional)
   - Feeding power supply: AC 100 / 240V 50/60HZ (AC 100 V optional)
   - Cleaning power supply: AC 100 / 240V 50/60HZ (AC 100 V optional)
   - Please choose the type of power shown on the printer in case of damage to the printer.
   - Make sure the printer is well grounded.
   - It is better to use UPS stable-voltage power.

4. Requirement for computer
   In order to avoid problems caused by computer, please choose high quality computer or brand computer such as DELL or IBM, etc.

3.3 Port of Printer

USB 2.0
Installation:
Connect printer's USB and computer's USB directly.
Find driver for USB at USB Instal File/Try Setup under printer's driver.

3.4 Connect With Power

1. After all the parts installed, move printer to its working area and clean up the package.

2. Connect power cables, including power for printer and heater, printing data cable. Protective switch only works for heater's power. Usually this switch should be at status of On (switch on above, far from red point).

3. After finishing, turn on power. The Auto-ink-supply-system runs to pump ink from main ink tanks to Sub ink tanks.

4. Feed in media and printer enters waiting status.

Then go in test printing. Observe ink drop. If not good, clean print head again.

Chapter 4 Equipment Structure and Accessory

The main components charts of FINA 160 Inkjet Printer list as below:

Chart 4-1 Front View of FINA 160 Printer

Chart 4-2 Media feeding system

Chart 4-3 Media feeding and take-up rollers

Chart 4-4 Media take-up roller and motor

12
13

14

15
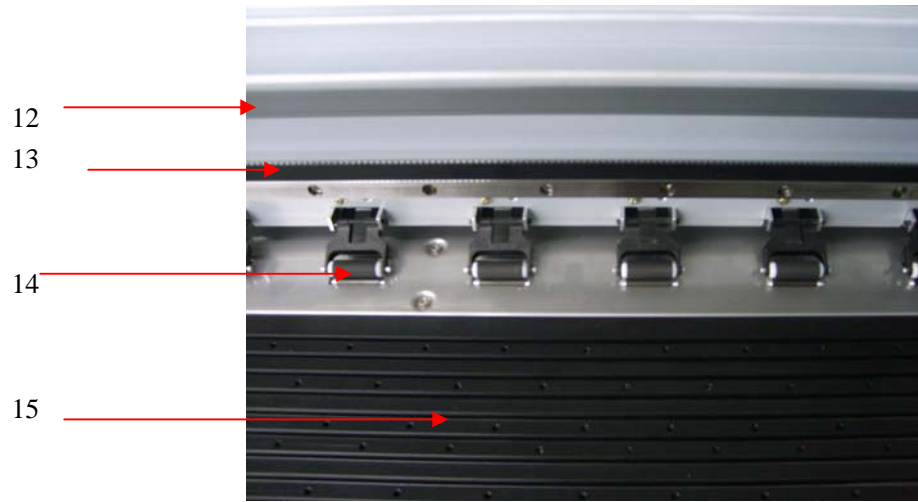
Chart 4-5 Y raster bar and press rollers

16
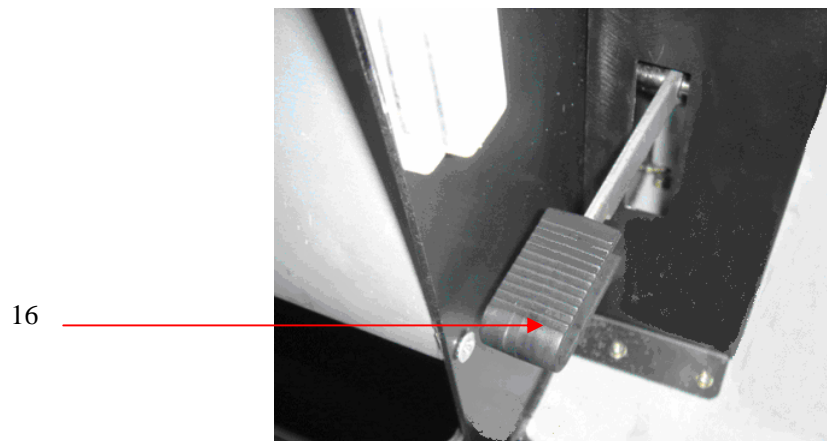
Chart 4-6 Press roller control pole
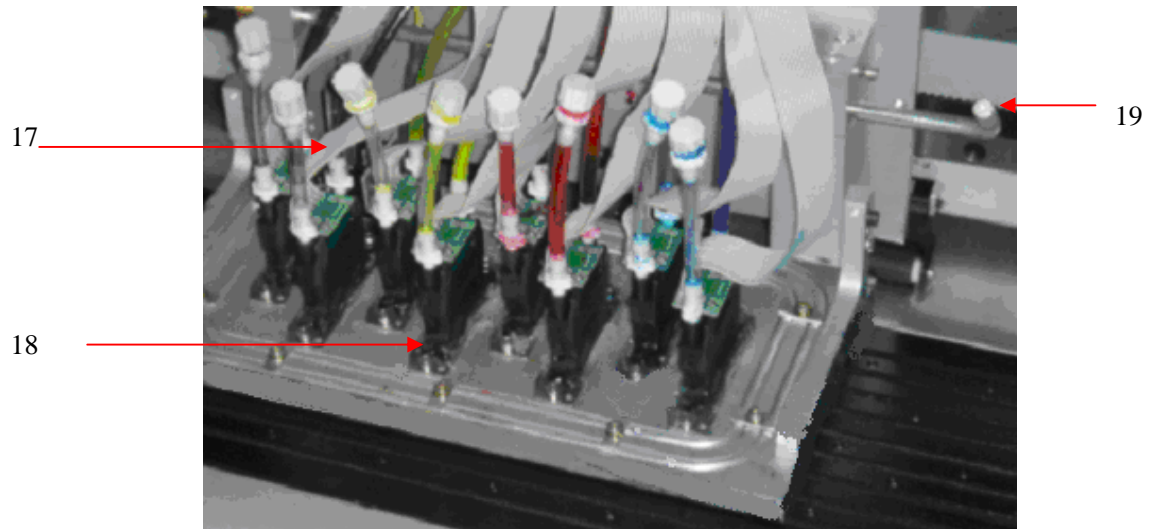
Chart 4-7 Print Carriage of FINA 160 Printer
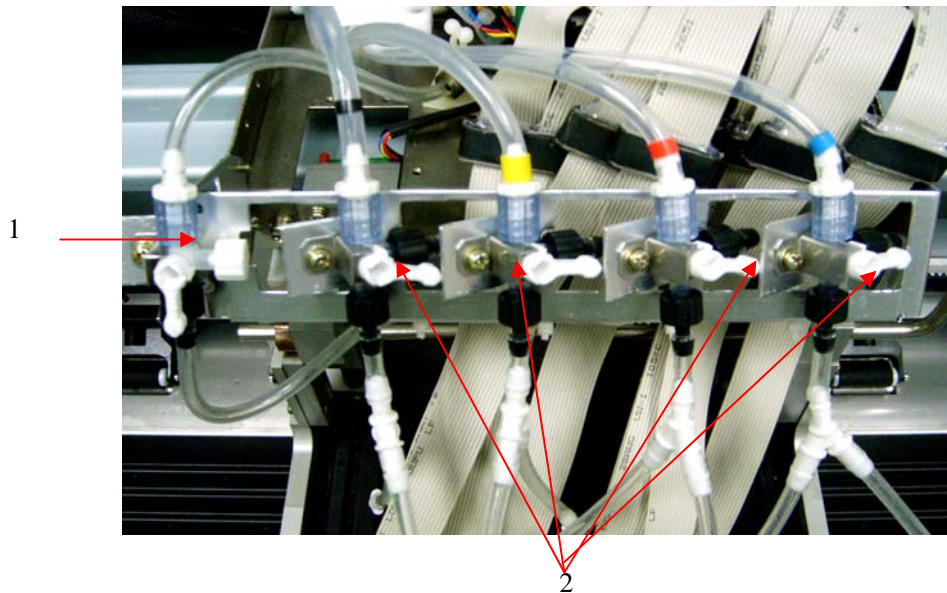
1. Solution valve: control solution for solution cleaning

2.3-way valve: control ink and solution for printing and cleaning

Figure 4-9 Solution valve and 3-way valves

20   21   22

23   24   25   26

Chart 4-8 Media feeding and take-up motors switches and Power sockets

27   28

Chart 4-9   pumps

29

Chart 4-10 Assistant Ink tanks

Chart 4-11 Ink filters and valves

Figure 4-12 Cleaning buttons

33 →

Chart 4-13 Print Interface

Parts on the printer include:

1. LCD Control Panel：Set up and execute function and mode

2. Print Carriage：8 piezo print heads

3. Waste Ink Tank：Collect the waste ink during cleaning

4. Media Take-up Roller：Supporting media for printing

5. Front Heating board：Heat media to dry the ink on the media

6. Fans: Dry the printing media

7. Media Feeding Roller：Hold media for printing
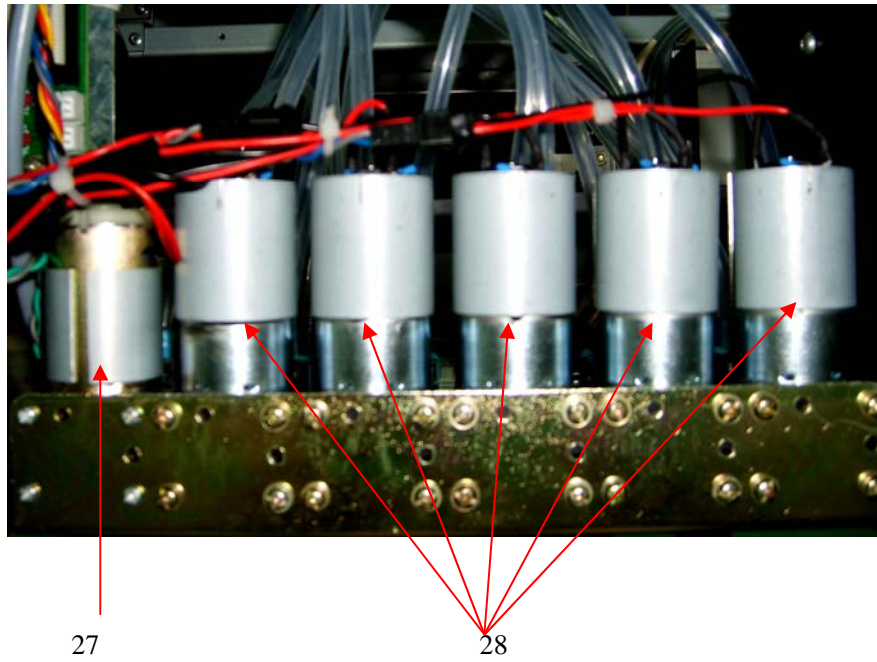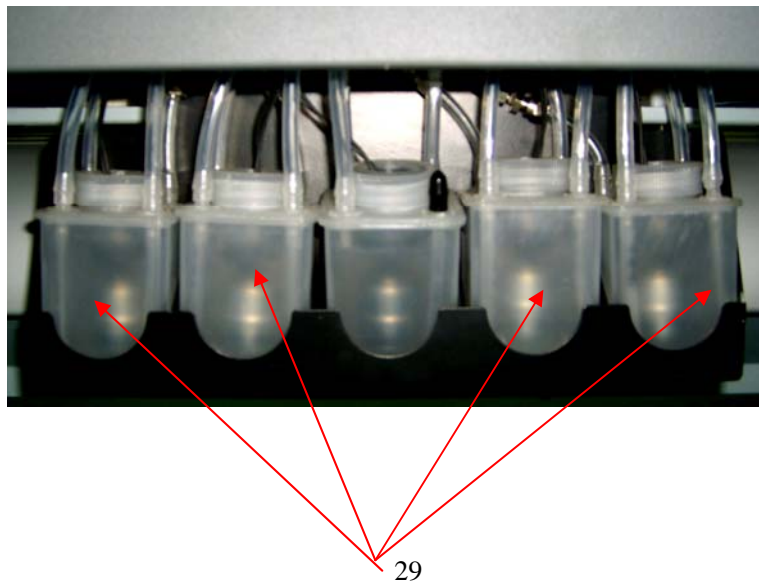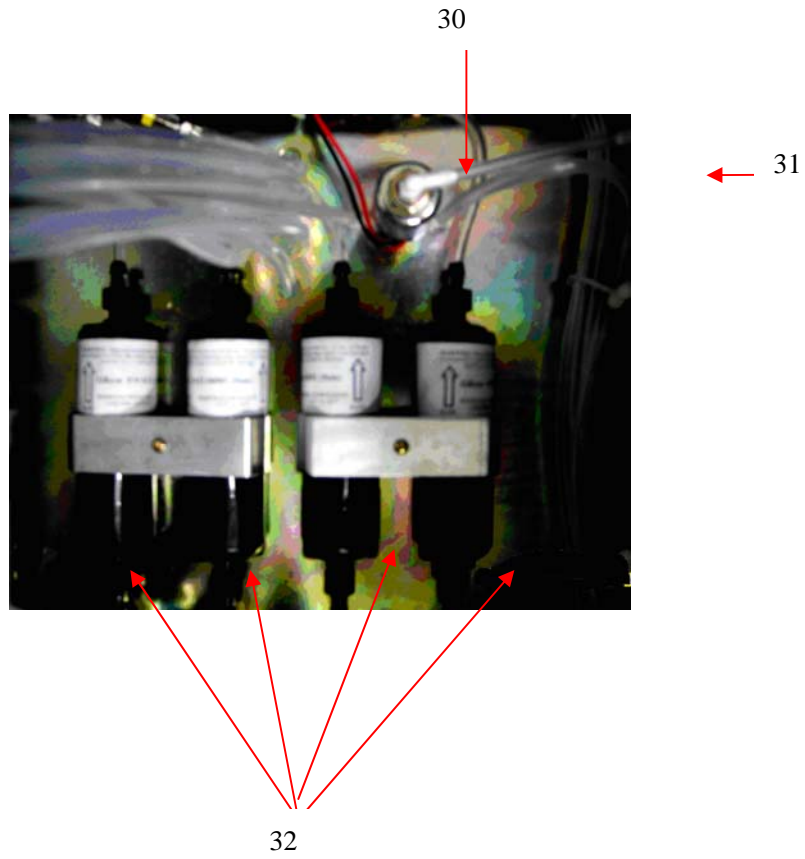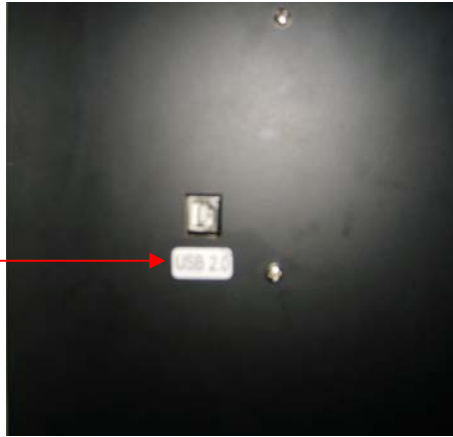
8. Media take-up motor：Take-up Roller driver

9. Media feeding motor：Feeding Roller driver

10. Rubber Roller: Improve the rubbing strength when feeding media, for feeding media easily

11. Tightening device: Make media tightening and feed media automatically when the signal is detected by media Auto-feeding sensor.

12. Y-raster bar: Take count of print head horizontal moving, so as to insure of Y-direction image precision.

13. Y-strap: Drive print head horizontal moving

14. Press Roller：Press media and make media smoothly

15. Printing Platform：Platform for printing

16. Press Roller Control Pole：Control press roller up / down for media feeding

17. Data Cable: Used for date transmission

18. Print Head: Xaar126/35 piezo print head

19. Print head adjusted pole: Control the print head up and down

20. Media feeding / take-up Selective switch: Control switching between media feeding and take-up

21. Media Feeding System Switch：Make media feeding roller turn forward or backward

22. Media take-up System Switch：Make media take-up roller turn forward or backward

23. Heating Power Socket: Provide power for heater

24. Heater Protective switch：Prevent electric leakage of heating board

25. Power Socket：Provide power for printer

26. Power Switch：Turn on/off printer

27. Air pump: supply air

28. Ink pump: provide ink to ink tank.

29. Ink Bursa: Save ink and air amortization after positive pressing ink

30. Valve: Automatically control the air route.

31. Disk filter: Filtrate impurity in the air.

32. Ink filter: Filter impurity in ink .

33. Print Interface：USB2.0 interface or connect to data card in computer.

Chapter 5 Usage and Maintains of print head

5.1 Usage of Xaar Printer
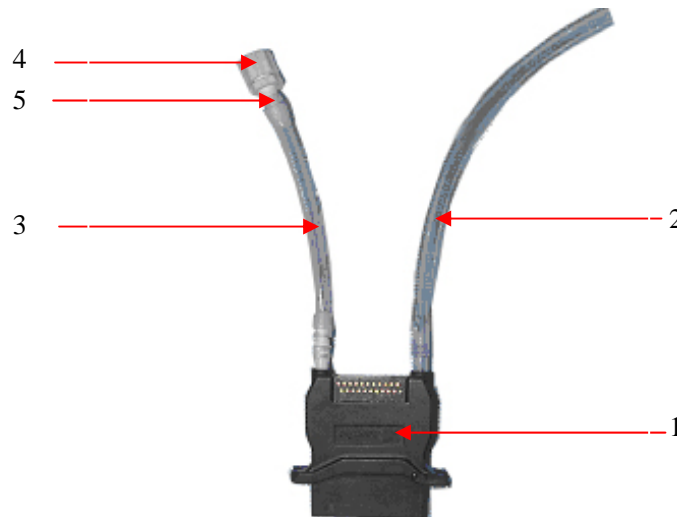
1— Print head

2— In tube

3— Out tube

4— Ink tube cap

5— Fitting

Chart 5-1 Print head

1、Flush humectants out of print head

To moisturize print head, lots of humectants are injected into the head before it is used. The humectants must be flushed out for the first using. Before fix the head on the print head frame, do the steps as follows: Joint a filter on the In-tube of the head, and then joint an injector--which fills with flush solution--on the filter. Inject 10-20 ml flush solution to the head to eject the humectants inside. Then fill the head with flush solution to dissolve the humectants completely within 5-10 minutes. Finally, flush the head with about 30ml flush solution to eliminate the humectants completely.

Make sure to operate on a stable and clean platform.

Cautions:

a) Clean platform for convenient operation;

b) Don't touch the surface of head and socket with hand;

c) Clean the filter with flush solution;

d) Connect a tube on the exit of the head to prevent ink flowing into the socket;

e) Don't touch the surface of head with other objects;

f) Be careful to distinguish In tube and Out tube of the head;

g) Eject flush solution from the nozzles with strength no more than 0.3 kg. (It is better to hold the injector with single hand and push it with the same thumb.)

2、Extrude air from the print head"

After fixing the head on the head frame (be cautious of the in tube and out tube). Remove the Cap from the Out tube; positive-pressure clean to fill the head with ink till ink streams out from nozzles. During the process air is extruded completely from the head.

3、Moisturize print head surface

After extruding air from the head, cover the Cap on the Out tube. Positive-pressure clean again until ink streams out of the nozzles, then scrub the head surface with a dry clean stick to form a protecting layer of ink on the head surface. The ink on the surface will stream into the nozzles because of negative pressure.

Notes:

Never scrub the head surface when head surface is dry, for that will orient air into the nozzles and shape bubbles in the pipelines and affect the printing quality.

4、Test printing

Design some color blocks as 20x20cm with some image operating software, and set color luminance as 100%, 50% and 10%. Print the color blocks under test mode and check the print result. If the print result is normal which means no ink-break and no ink spots on the mediums, the printer can work normally.
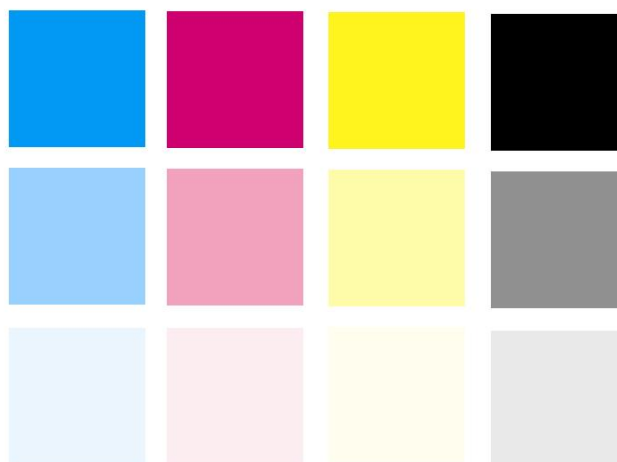
Chart 5-2 color blocks for test printing

5.2 Cleanness and maintenance of the print head

1. Ink replacing

Flush the print head with the original ink first, and then flush it again with new flush solution, which matches the new ink.

2. Print head cleaning

If low quality printing takes place, a positive-pressure cleaning is proper for the head. After positive pressure cleaning, scrub the head surface with a dry clean stick to stop ink streaming from the nozzles. Be sure not to use a stick with flush solution to scrub the head surface, otherwise, the flush solution will be siphoned into the nozzles.

3. Moisturize print head

Use wet keeping frame to moisturize the head if the printers is left unused. The print head moisturizing method of this printer displays as follows: adhere a clean non-woven fabric with some flush solution on the print head and wrap it with a fresh keeping polyester film.

Note:

At this time, "Moisturize print head" means moisturizing print head when it's unused in a short time.

Chapter 6 Basic Panel Operation

6.1 Menu Structure of Control Panel
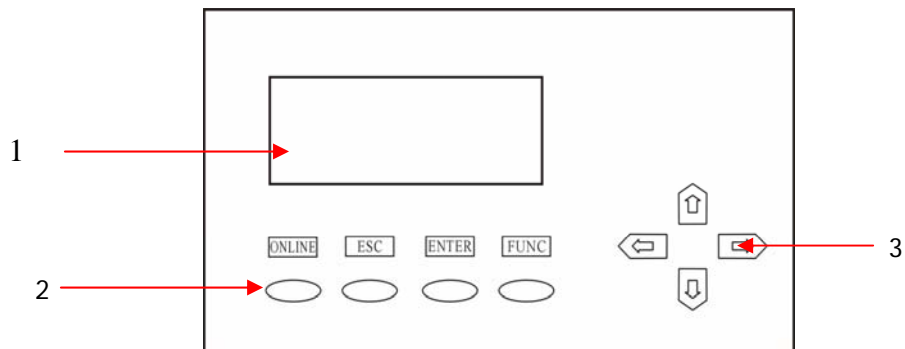
1—LCD
2-- Function Keys
3--Direction Keys
Chart 6-1 Control Panel

6.1.1 Function description of the keys

1、 Direction keys

1） Operation via control panel：

⇧ ⇩ key：Scroll the menus for selection；reduce or increase the values on LCD。

⇦⇨ key：Move the cursor position over the number string on LCD。

2） When the printer is waiting：

⇧ ⇩ key: Move the media forward and backward；

⇦⇨key: Move the p/h carriage to cleaning position for cleaning and move it back to original

position after cleaning。

2、Function keys

   1) **ONLINE**：Switch the printer online and offline / press down and hold it for several seconds to pause printing。

```
┌─────────────────────────────┐
│ Waiting…                     │
│                             │
│                             │
│                             │
│ Online                      │
└─────────────────────────────┘
```
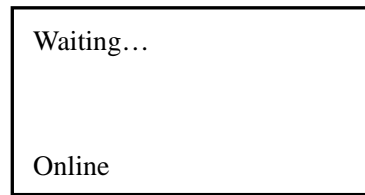
   2) **ESC**：Cancel operation and return to up-level menu。

   3) **ENTER**：Confirm and execute the operation。

   4) **FUNC**：Shift to special function；Combine with ⇦ key to test print when the printer is waiting。

3. Basic operation

   After power on the printer, the system executes X and Y motion test and p/h test.

```
┌──────────────────────────────────┐
│ Booting        >System           │
│                >Y Motor          │
│ V1.10          >X Motor          │
│ Check          —>Print head      │
│                                  │
└──────────────────────────────────┘
```

   After self-test, the system moves the p/h carriage back to original position. The LCD displays printer model and version number and then shift to basic operation menu shown as below. That stands for the printer is ready.

```
┌──────────────────────────────────┐
│ Menu     │ 1. Ink Status      +  │
│          │ 2. Heat Status     +  │
│          │ 3. Cleaning Tool   +  │
│ Offline  │ 4. Print para      +  │
└──────────────────────────────────┘
```

6.1.2 Menu structure

Menu structure includes main menus and sub menus. Main menus followed by "+"s have sub menus inside. Submenus followed by "−"s have no lower level inside.

Main menu includes items as below：

—> 1. Ink Status   +

2. Heat Status   +

3. Cleaning Tool   +

4. Print para   +

5. Application   +

6. Engineer Set   +

Press ⇧ ⇩ key to scroll the menus upward and downward. Press **ENTER** to unwrap submenus. For example, while the arrow points to "**1. Ink Status**", press **ENTER** to unwrap the submenu. LCD displays details of submenu **M1** as below:

Menu →	Ink Status
M1	Ch A C M Y K c m
	Rn _ _ _ _ _ _ _
Offline	Al _ _ _ _ _ _ _

On the LCD, **M1** stands for this submenu under main menu No.1. Here press **ESC** key, it returns the display to main menu.

Arrow points to the first line on the LCD. Scroll the submenus by pressing ⇧ and ⇩ key same as main menu. The submenu followed by a "−" means has no lower submenu inside. Press **ENTER** key to execute the operation. Here press **ESC** key, operation will be canceled.

6.2 Function Description in Details

Main menu	Submenu	Function description
1. Ink Status	Ink Status Ch A C M Y K c m Rn _ _ _ _ _ _ _ Al _ _ _ _ _ _ _	Ink status displays. The LCD display details as below: ┌─────────────────────────┐ │ Menu │ Ink Status │ │ │ Ch A C M Y K c m │ │ │ Rn _ _ _ _ _ _ _ │ │ Offline │ Al _ _ _ _ _ _ _ │ └─────────────────────────┘ Item **Ch**: stands for ink channels. A means all channels; Item **Rn**: displays ink supply status of corresponding channel; Item **AL**: displays ink lack alarming of corresponding channel; Press **ENTER** to refill ink and cancel alarming. **For 4 colors and 8 print heads supplying ink and no safety tank in this printer, one of "C, M, Y, K" on the LCD flashes in low ink status and "A, c, m" is still.** **Note:** **In "Ink Status", press the direction key ⇨ for a long time stands for only cleaning "C" color print head;** **press the direction key ⇧ for a long time stands for only cleaning "M" color print head;** **press the direction key ⇦ for a long time stands for only cleaning "Y" color print head;** **press the direction key ⇩ for a long time stands for only cleaning "K" color print head.**

2. Heat Status	Heat Status FH Pre P/H Tem 00 00 00 Set 00 00 00	Heating status displays. The LCD display details as below: | Menu	Heat Status
	FH Pre P/H
	Tem 00 00 00
Offline	Set 00 00 00	 Item **Tem**: displays actual temperature; Item **Set**: displays setup temperature. **For no back heating bedplate in this printer, the actual value of preheating temperature is 0.**
3. Cleaning Tool	Firing	The LCD display details as below: | Menu	1. Firing -
	2. Jam Test -
	3. Clean POS -
	4. Home Post -
	5. Auto Clean -
Offline	6. Clean (High) -	 Press ENTER key to execute the operation, "**Busy**" flashes on the LCD. P/Hs spray downward to prevent nozzle clogs. The LCD stops flashing after firing finishes. Press **ENTER** key again to execute P/H firing one more time if necessary. The volume of ink fired should be set in submenu **Firing Vol** under menu **Print Para**.
	Jam Test	Press **ENTER** key to execute the operation of test printing.
	Clean POS	Press **ENTER** key to execute the operation of moving P/H carriage to cleaning position.
	Home Post	Press **ENTER** key execute the operation of returning the P/H carriage to original position.

	Auto Clean	Press **ENTER** key to execute the operation of pressing ink in original position. It supplies ink 2 seconds and stops 1 second. After finishing it, it cycles the process once. In the whole ink supply process, it supplies ink 4 seconds.
	Clean (High)	Press **ENTER** key to execute the operation of pressing ink in original position, and supply ink 16 seconds continuously. **But this function is used to pipe out air and must be used cautiously when the first turning on printer or many bubbles in pipe circuitry.**
4. Print Para	Print Post	The LCD display details as below: | Menu	Print Pos. (mm)
---	---
Offline	0298	 Number string "XXXX" flashed on the LCD. Here press ⇦ and ⇨ key to move the cursor position over the number string and press ⇧ or ⇩ key to increase or reduce the value of the flashing number. Press **ENTER** to save the number as print position. Images and test print start from this position. Here press key combination **FUNC + ⇧** or ⇩ key to move the media forward or backward; press key combination **FUNC + ⇦** key to move the P/H carriage to printing position It will tell the position set well or not. Press any key to return the P/H carriage to original position.

Bi-dir. Adj	Press ENTER key and the LCD displays as below: | Menu	2、Bi-dir. Adj.
Offline	0050	 This function is used to adjust bi-direction printing to ensure bi-direction printing quality.
Print Speed	This function is used to adjust the scan speed of the P/H carriage. The LCD displays details as below: | Menu	3. Print Speed
Offline	Norm	 Press ⇧ or ⇩ key to select from the 3 options. **High** scan speed will reduce printing quality. **Low** scan speed will increase printing quality but reduce printing speed. The suggestion is **Norm**.
Feed Speed	The LCD displays details similar to Print speed. "**Norm**" flashes as the default option. Press ⇧ or ⇩ key to select from the 3 options. The suggestion is "**Norm**".
Firing Vol	"XXXX" flashes on the LCD. Press⇧ or ⇩ key to increase or reduce the value by 1. The default value of Firing Vol is 20. This value is the firing volume of P/Hs for auto spray and printing after cleaning (that means all nozzles are unclogged).

		Numbers are used for flash mode setting:
	Flash Mode	**0** stands for P/H does not flash during printing;
		The LCD displays details as below:
		<table><tr><td>Menu</td><td>6、Flash Mode</td></tr><tr><td>Offline</td><td>0030</td></tr></table>
		When the value is 1, it stands for pint head flashing in original position after printing 1Pass;
		When the value is 2, it stands for pint head flashing in original position after printing 2Pass;
		... ...
		When the value is 30, it stands for pint head flashing in original position after printing 30Pass;
		The biggest value can reach to 30.

	PH Volt. Set	This function is used to set Voltage of P/Hs. The LCD displays details as below: | Menu	1 PH 1 Voltage
	2 PH 2 Voltage
	3 PH 3 Voltage
Offline	4 PH 4 Voltage | In this printer, print head 1, 2 stand for C color print head; print head 3, 4 stand for M color print head; print head 5, 6 stand for Y color print head; print head 7, 8 stand for K color print head. Go on pressing **ENTER,** the LCD shows: | Menu	1 PH 1 Voltage
	0068
Offline	0137	 The upper numbers "**0068**" stands for the setting EF value 0.68 of C color print head. And the nether numbers "**0137**" stands for the real voltage value 13.7V of C color print head. Here press ⇧ and ⇩ key to scroll the submenu. Then press **ENTER** key to change the PH1 voltage value. The method of changing other PHs voltage is the same as upper.
5. Application	UV Lamp Power	**There is no use for this printer.**
	Front Heater	Used for setting temperature of front bedplate. "XXXX" flashes on the LCD. Press ⇧ or ⇩ key to increase or reduce the value of temperature. And the bigger value is, the higher temperature is. The highest temperature can reach to 55°C.
	PreHeater	"XXXX" flashes on the LCD. Press ⇧ or ⇩ key to increase or reduce the value of temperature. And the bigger value is, the higher temperature is. **There is no use for this printer.**

	PH Heater	Menu　　　　　PH Temp (°C) Offline　　　　　　0045 Used for controlling print head temperature in printing. LCD shows as the upper chart. "XXXX" flashes on the LCD. Press ⇧ or ⇩ key to increase or reduce the value of temperature. And the bigger value is, the higher temperature is.
	Media Detect	Press **ENTER** to execute the operation, the LCD displays OFF means the function is switch off when the printer is waiting. 　　**OFF**（function switch off） Press ⇧ or ⇩ key to switch on the function. 　　**ON**（function switch on） Pull up the press pole and then pull it down, the LCD displays details as below: Menu　　　　　　Media Detect Warn2　　　　　　　Star:0000mm 　　　　　　　　　　Lenth:0000mm Offline Press **ENTER** key to start media edge detecting. Press ESC to cancel the operation. After detecting, "**OK**" displays means the detecting is successful and saves the result as print position, which should add the value of offset set at below step. "**Error**" displays means the detecting is failed and the value of print position does not change.

	Media Offset	"XXXX" flashes on the LCD. Press ⇧ or ⇩ key to increase or reduce the value. This value added to the value of media detecting is saved as the value of print position.
	Fan velocity	This 0-10 value denote the ten steps of the media negative fan speed. 10 is the most fast
	UV Lamp CHK	**This function is null for the moment.**
	T Neg. Pressure	**This function is null for the moment.**

		Select ink curves and ink curves shows relations between voltage and temperature.
	Curve of ink	<table><tr><td>Menu</td><td>9. Ink Curve</td></tr><tr><td></td><td>0019</td></tr><tr><td>Offline</td><td>Xr 3s EP</td></tr></table> LCD displays details as below: 　　□□ □ □ □□□□ 　　1　2 3　4 The name of ink curve indicates as below： 1、**SK**: Stands for **SKIEO** print head 　 **Xr**: Stands for **Xaar** print head 　 **Sp**: Stands for **Spectra** print head 2、**2**：Stands for 200 dpi print head； 　 **3**：Stands for 300 dpi print head； 3、**S**：Stands for solvent based ink type； 　 **O**：Stands for oil based ink type； 　 **U**：Stands for UV ink type 4、ink name The ink curves are different with different ink types. For using Xaar126 print head and solvent ink in this printer, so the ink curve showing on the LCD lists as upper.
6. Engineer Set	Clean Post	Set the distance from original position to cleaning position. P/H moves to cleaning position for negative pressure cleaning. (It′s better not to change this value once set by the technician.)
	Printer Width	Set the biggest distance in scanning direction. (It′s better not to change this value once set by the technician.)

	Moving Test	Press **ENTER** to execute the operation. The LCD displays details as below: ┌─────────────────────────────┐ │ Menu │ Moving Test │ │ │ │ │ │ │ │ Offline │ 0000 │ └─────────────────────────────┘ And P/H carriage moves back and forth to simulate printing, but P/H not spray. It's used for mechanical test. The number on the LCD indicates times the P/H carriage moves back and forth.
	Default Set	Reset the parameters to default setting. Press key combination of **FUNC+ENTER** to execute the operation.。 (It had better not to execute this operation except for the technicians.)
	Y Test Speed	It is used for speed test of Y motion. (It had better not to execute this operation except for the technicians.)
	X Test Speed	It is used for speed test of X motion. (It had better not to execute this operation except for the technicians.)

EF value setting

Each Xaar126 300/35 head has its own EF value. Manufacture always provides a standard EF value, which is captured under standard condition. Users input this value at column Voltage. Usually, the printing effect is good. The value is marked on the head. It is also saved in the chip of print head driver. User can download it directly.

If the voltage is too high, it produces the satellites and ink supply is easy to break；If the voltage is too low, the printing line is not straight and easy to have an angle. Besides, ink volume is small and output color is light. Therefore, every head has its optimal EF value. When adjusting, you can adjust the EF value one by one. Usually user needn't to adjust EF value.

Note:

When install print head, select the 2 with same or similar EF value for 1 color, or it will cause different color of front and rear print heads.

6.3 Printing Steps

On normal condition, the steps are as follows:
1. Power on the printer.
2. Turn on the computer.

Note：

   It is recommended to turn on the printer before computer. Otherwise the connection may fail.

3. Install media, put down the press bar to press on media.
4. Clean the head and start the self-diagnosis till no nozzle clogging.
5. Press ONLINE.

Menu	1. Ink Status	+
	2. Heat Status	+
	3. Cleaning Tool	+
Offline	4. Print para	+

Offline mode

ONLINE
MODE

Online mode

Chart 6-2 Online and offline Mode

6. Trim the pattern for printing, and save it in computer.
7. Open FINA RIP.
8. Create new file.
9. Read the pattern for printing.
10. Adjust the position, size, property, and resolution of the pattern.
11. Printer setting

   1) Select File/Printer setup. Below dialogue box shows:

Chart 6-3 Printer Setup dialog box

   2) Select the type of printer as "Infinity printer" and the model as "Fina 160"

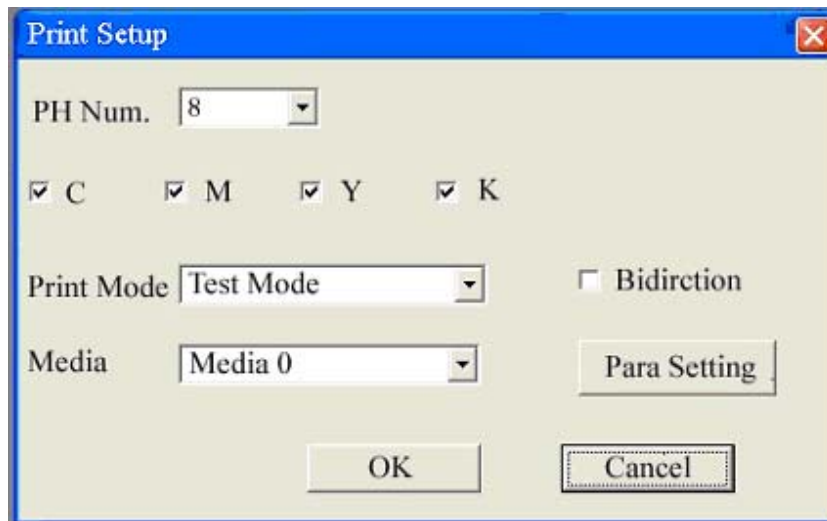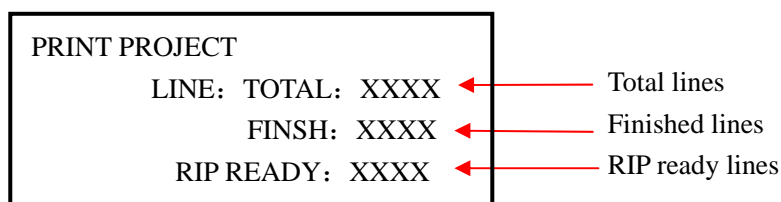   3) Click the "Printer setup". Set the relevant value in the following dialogue box.

Chart 6-4 Print setup dialog box

        a. Select the printing resolution.

        b. Select BID or single direction printing. BID has higher efficiency than single direction.

    4) Click "color tune" to activate following dialogue box.

Note:

        Details of the functions above and others referred to the *GRAPHTEC RIP Manual*

12. Click "Printing Project" to print.

13. LCD displays as below when printing:

PRINT PROJECT
        LINE：TOTAL：XXXX ←————— Total lines
              FINSH：XXXX ←————— Finished lines
       RIP READY：XXXX ←————— RIP ready lines

14. If clogging appears during the printing，press ONLINE for a longer time (3s) to pause printing for print head cleaning. After cleaning, press ONLINE to go on printing.

Cleaning procedure during printing:

    If you find print heads clogged during printing, press and keep **ONLINE** button to pause printing. Select "**Auto clean**" in menu and press "**ENTER**" key, the system presses ink 2 seconds and stops 1 second automatically. Then cycles once. The pressing ink time in the whole process is 4 seconds. Scrub the head surface with a clean stick after ink not dropping from print holes. After accomplishing cleaning 5 or 10 minutes later, Press **ENTER** key to continue printing. Press **ESC** key to cancel the printing.

    Do not switch mode from **ONLINE** to **OFFLINE** until "printing cancel" shows up on computer.

15. Press ONLINE when the printing is all finished. Then the printer is under the Offline mode.


 Note:

    To cancel printing operation, usually do in RIP. If you want to cancel printing directly on the printer, press ONLINE button after the menu "printing cancel" appears in software.

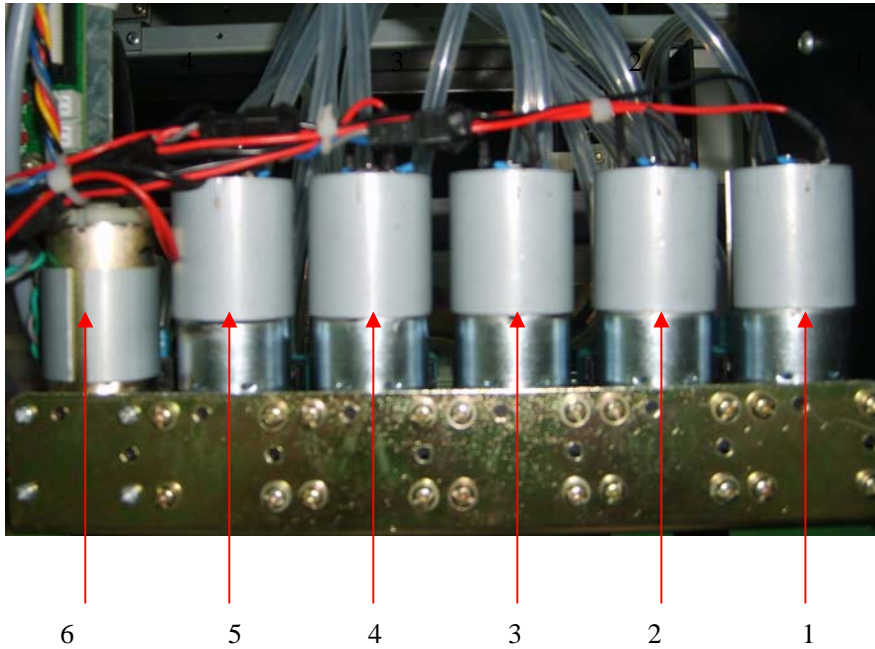# Chapter 7 Description of Ink Supply, Cleaning system and Assistant board

7.1 Ink Supply and Cleaning System

The ink supply and cleaning system consist of ink cartridge, ink bursas, print head, ink pumps and filters, etc. The components charts displays as below:
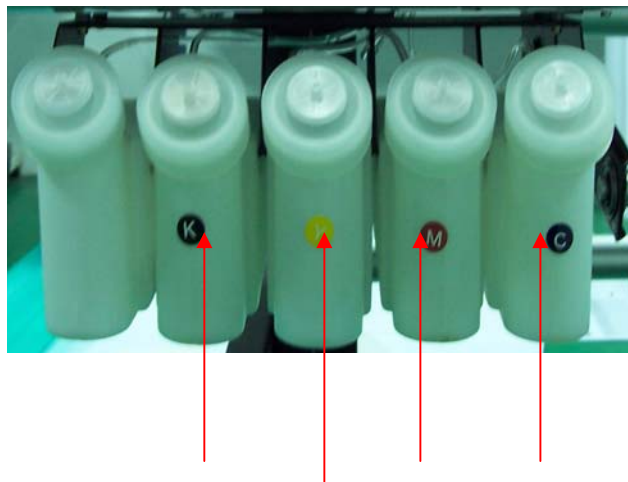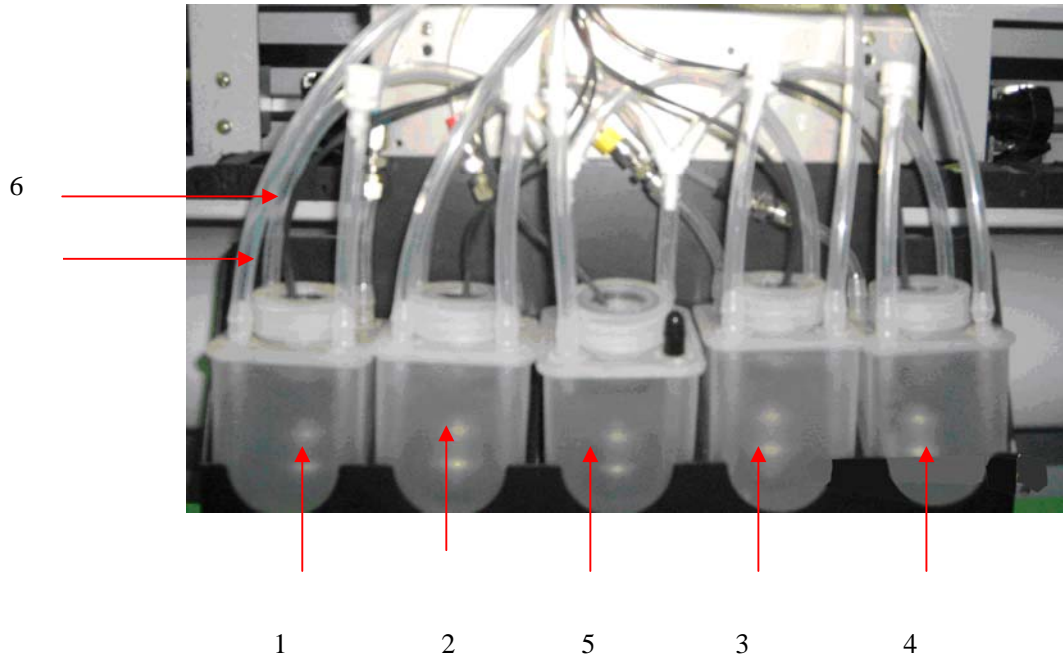

1. Ink cartridge C
2. Ink cartridge M
3. Ink cartridge Y
4. Ink cartridge K

Chart 7-1 Ink cartridges

1. Ink pump C
2. Ink pump M
3. Ink pump Y
4. Ink pump K
5. Solution pump
6. Air pump

Chart 7-2 Ink filters and pumps

6

1   2   5   3   4

1. Assistant ink bottle C

2. Assistant ink bottle M

3. Assistant ink bottle Y

4. Assistant ink bottle K

5. Safety bottle

6. Ink level switch (inside the assistant ink bottle)

7. Ink outlet tube

Chart 7-3 Assistant ink tanks
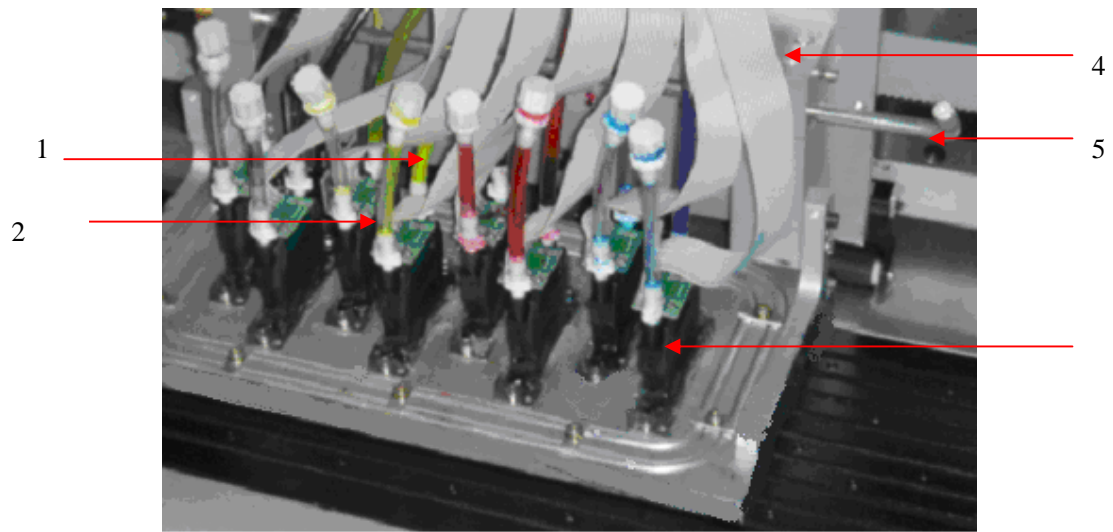
1. Ink-let pipe
2. Ink-out pipe
3. Xaar126 print head
4. Data cable
5. Print head adjusted pole

Chart 7-4 Print carriages

7.2 Assistant and ink supply board

Assistant and ink supply Board has many functions. It can control ink supply, cleaning and heating. The chart of assistant board lists as below:
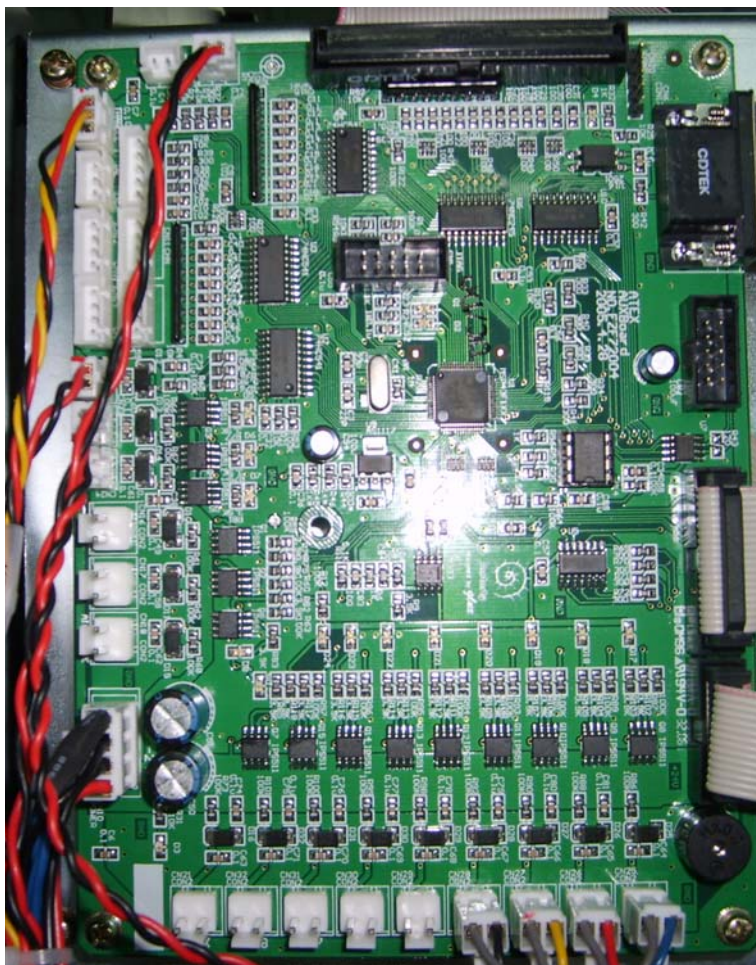

Chart 7-5 Assistant board

Chapter 8 Ink Supply System

8.1 Summary

This ink supply system can control automatically several pumps at the same time and provides protect function. Isolated ink supply system is easy for operation.
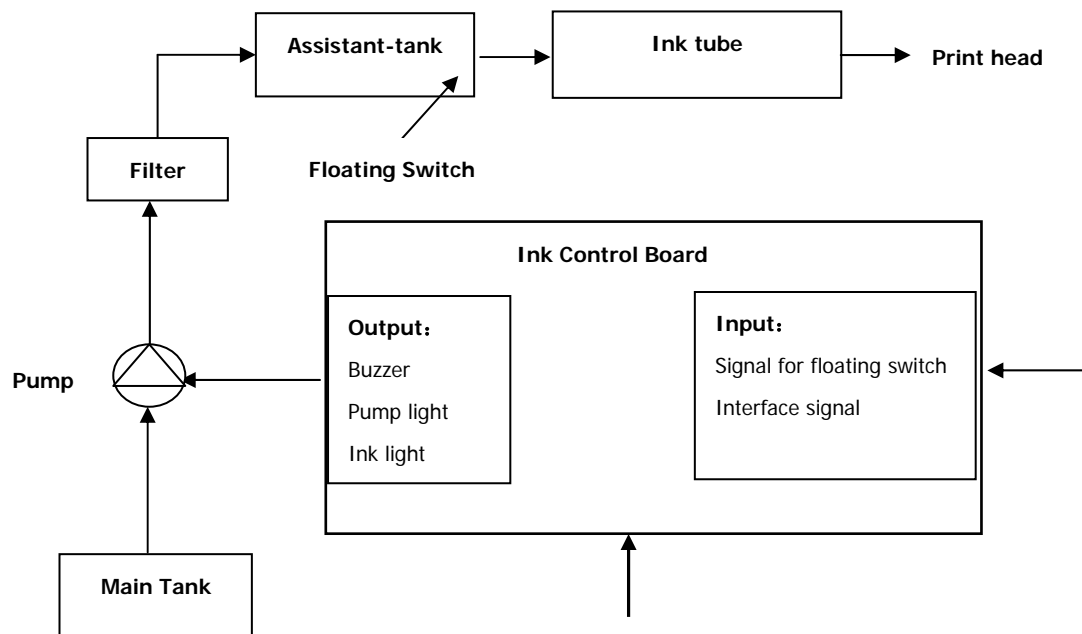
8.2 System Diagram

Chart 8-1 Ink supply and cleaning system Diagram

8.3 Function Description

1. This system work automatically and control several pumps to supply ink simultaneously. When printer is power on, ink pump starts automatically to pump ink to assistant ink tanks from main ink tanks.

2. The system works with perfect alarm and protection function. If any problem occurred in any pump, it will alarm and indicate which one is in trouble on the LCD and the troubled one will not affect others.

3. Ink filter switches get signals through serial ports.

4. It is easy to connect it to other systems. All floating switches signals can be input by serial port or parallel port.

5. Main controller consists of micro CPU, which can check signals using software to filter out the false ones, which is helpful to make system work more reliably.

6. The ink-pumping limit is controlled by intelligent control system of main control board; in case that the electric circuit will cause ink supply shortage.

8.4 Operation Description

Note:

Please read descriptions carefully for ink supply system, cleaning system and Ink Control system before starting the following operations.

1. As soon as the printer's connected with power, system detects floating switch signal automatically, and drives ink pumps to pump ink to assistant ink tanks if it found ink not enough, "**Warning 3**" displays on the LCD.

2. When ink channel lacks of ink, system will start the pump automatically; and indicator lighten. After the floating switch senses the ink, the pump will continue to work for a little period and then stop; and the indicator light extinguishes.

3. When ink in assistant tanks is used out or other reasons cause some pump running overtime, the system will alarm (voice a straight buzz) and "**Err5**"displays on the LCD. Press "ENTER" key on control panel to refill ink and cancel alarming.

4. When waste ink tank is full, system will alarm as intermission buzz and "**Err7**" displays on the LCD.

5. When safety tank is full, system will alarm as short buzz and "**Err6**" displays on the LCD. Then you should empty the safety bottle.

8.5 Intelligent Detection Function

Intelligent detection function for ink supply system is implemented by collecting floating switch signal with high frequency. By using concept of probability, the signal is regarded as effective if probability of floating switch signals is higher than a set value (for example, 80%). Therefore, wrong act of floating switch can affect the system's stability much less and accordingly system's anti-disturbance improves.

Chapter 9 Cleaning System

9.1 Summary

  This printer adopts positive pressure cleaning and solution cleaning. You may execute cleaning before printing, during printing or idle for a long time.
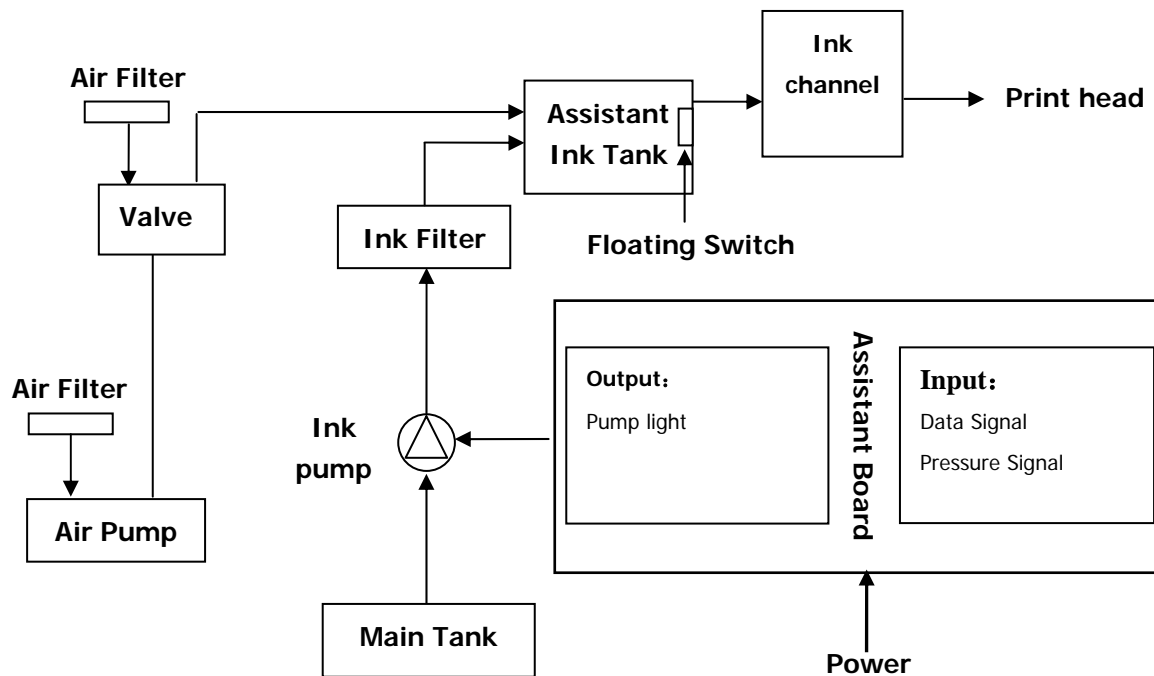
9.2 System Diagram

Chart 9-1 Ink supply and cleaning system diagram

9.3 Working principle of Positive Pressure Cleaning

When you press "clean" button, the cleaning signal will be transfer to assistant board and drive the air pump and ink pumps; air pump starts running and transfers air pressure to valve; the air pressure raises and transfers to assistant ink tanks through air channels. With pressure got from the air pump, ink will be purged through the head and nozzles. At the same time ink pump pumps ink to assistant ink tanks from main ink tanks, provides ink for print heads cleaning.

9.4 Operation Description of Positive Pressure Cleaning

When nozzles are clogged before printing or during printing, move print head to cleaning position and press "**Clean**" button on sideboard to launch positive pressure cleaning. Release the button to stop cleaning. Turn on "**Light**" Switch to lighten and check the ink drops.

If only 2 channels are clogged, you may clean two channels only instead of all four channels. If choose cleaning two channels, clamp the other two air route to cut off the air. Cleaning operation won't be executed without air pressure.

9.5 Flush print head with solution

If the printer is idle for a long time, it is better to clean the print heads with flush solution.

Remember to turn the handles of 3-way valves to vertical position before cleaning the P/H with solution, or the solution may break the tubes.

The way is: Turn the 3-channel valve to flush solution position (turn the handle upward) and move the print head carriage to clean position via control panel. Press "**Solution**" button on the sideboard. The solution pump starts and pushes cleaning solution to print heads therefore cleans the print heads.
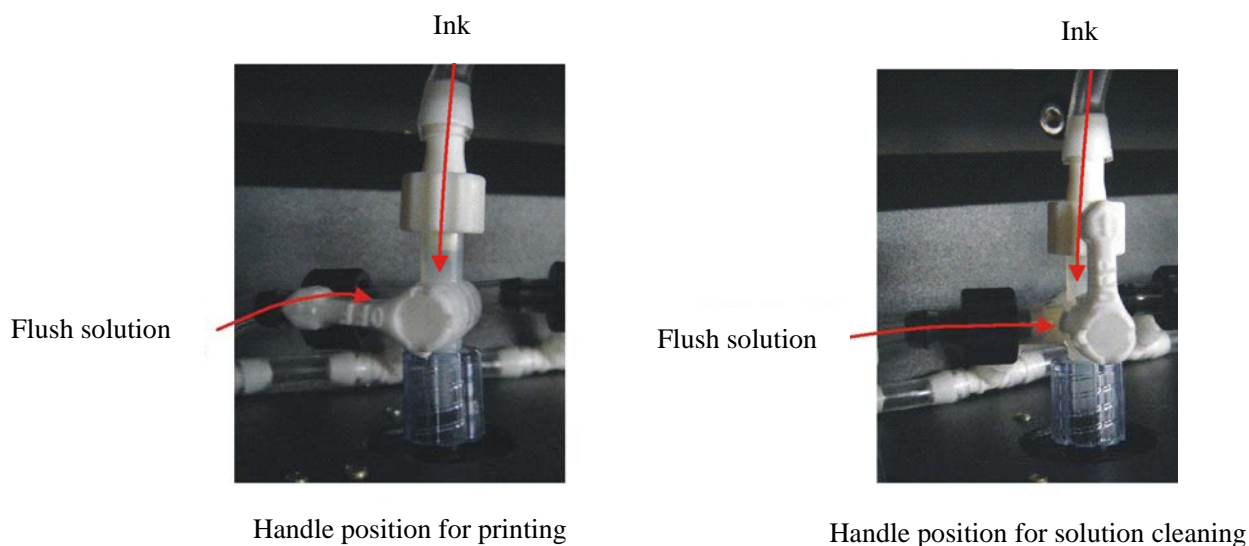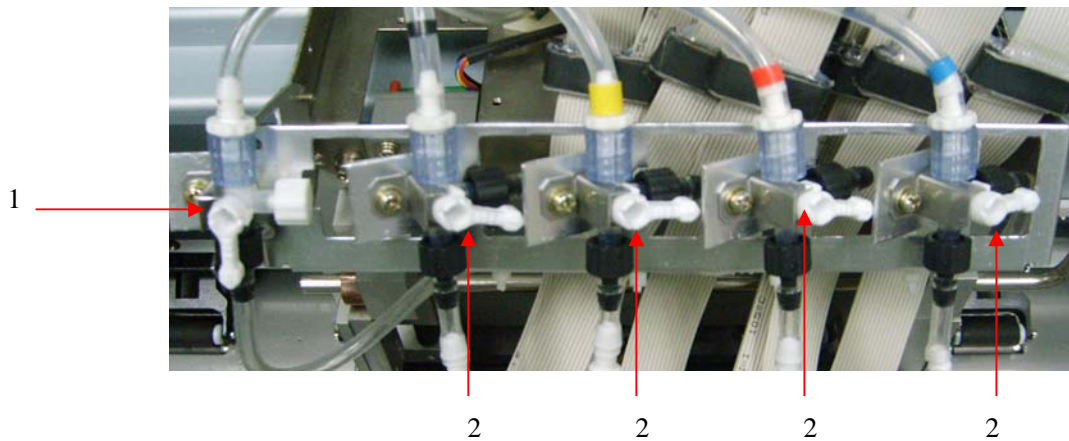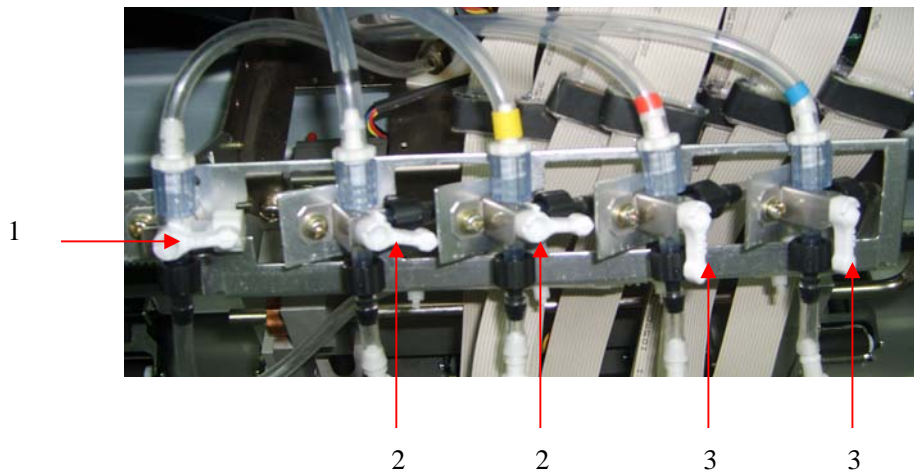
Ink   Ink

Flush solution   Flush solution

Handle position for printing   Handle position for solution cleaning

Figure 9-2 Handle position of 3-way valves for printing and cleaning with solution

1.Status of solution valve for solution during printing

2.Status of 3-way valves during printing

Figure 9-3 Status of solution valve and 3-way valves during printing

1- Status of solution valve for solution during cleaning

2- Status of 3-way valves not cleaning

3- Status of 3-way valves during cleaning

Figure 9-4 Status of valves for print head cleaning

When the printer will go on for printing, remember to turn the handles to horizontal position first and press "Clean" button for positive pressure cleaning until ink drops from the nozzles.

Note:

When the 3-channel valve is open to ink, never press the "Solution" button on the sideboard, or it will start the solution pump and pushes solution to the valve. The solution tube may burst from the valve.

Chapter 10 Heating System

10.1 Summary

This heating system can adjust temperature based on different PVC material and surrounding. It can adjust the temperature automatically to keep temperature constant. Customer can have satisfactory printing effect.
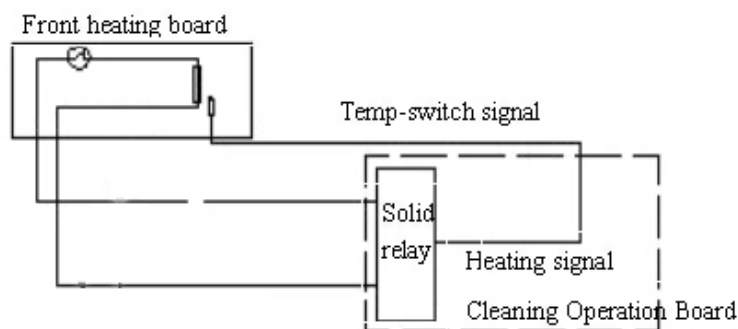
10.2 System Diagram

Chart 10-1 System diagram

10.3 Function Description

1、To keep the front heating board in auto constant temperature.

2、With advanced protective functions to avoid over-heating, leakage, etc. The line will be cut off automatically if a certain line's temperature is over 70° C. As soon as the temperature lowers, it will resume heating. Over heating will not occur when the entire input signal is cut off.

3、The system can work independently and can be easily transplanted. It is easy to convert input voltage from AC110V to 220V.

4、The heating system is controlled by advanced intelligent microprocessor; it has features of heating up quickly, controlling temperature accurately and saving energy.

5、Inner heaters are used. It is easy to install, with no extra space needed and longer lifetime.

10.4 Working Process and Characteristics

1. Users can amend the temperature of front heater from LCD.

2. Heating power supply is independent from control power supply. Please turn on the heating power before turning on the power for the printer. Once the power is on, the system heats up automatically to set temperature and keeps the temperature at the set value. Without turning on power for printer, the heating system will not work. However, there is still AC 220V inside machine.

3. Temperature detector lies about 50cm to the right physical printing original position. Print media should cover this region when printing.

4. After printing, make sure to turn off the two powers.

Chapter 11 Software Operation

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11.1 Installation

1. Installation of INFINITI RIP Software:

 Insert RIP CD into computer's CD-ROM

       a) Run. INFINITI RIP .exe

       b) Follow the instruction to finish the installation

2. Installation of printer driver

       a) Insert installation CD into CD-ROM

       b) Run setup.exe under directory of Try Setup Infiniti. V6.31

       c) Follow the instruction to finish the installation

Note：

Please use the default directory for the installation.

11.2 Application Of Printer Driver

Note：

The driver program is only for engineer to adjust the print head，and not necessary for normal operation.

11.2.1 Enter TRY

1. Click **Start\Program\Try**, enter Try system.
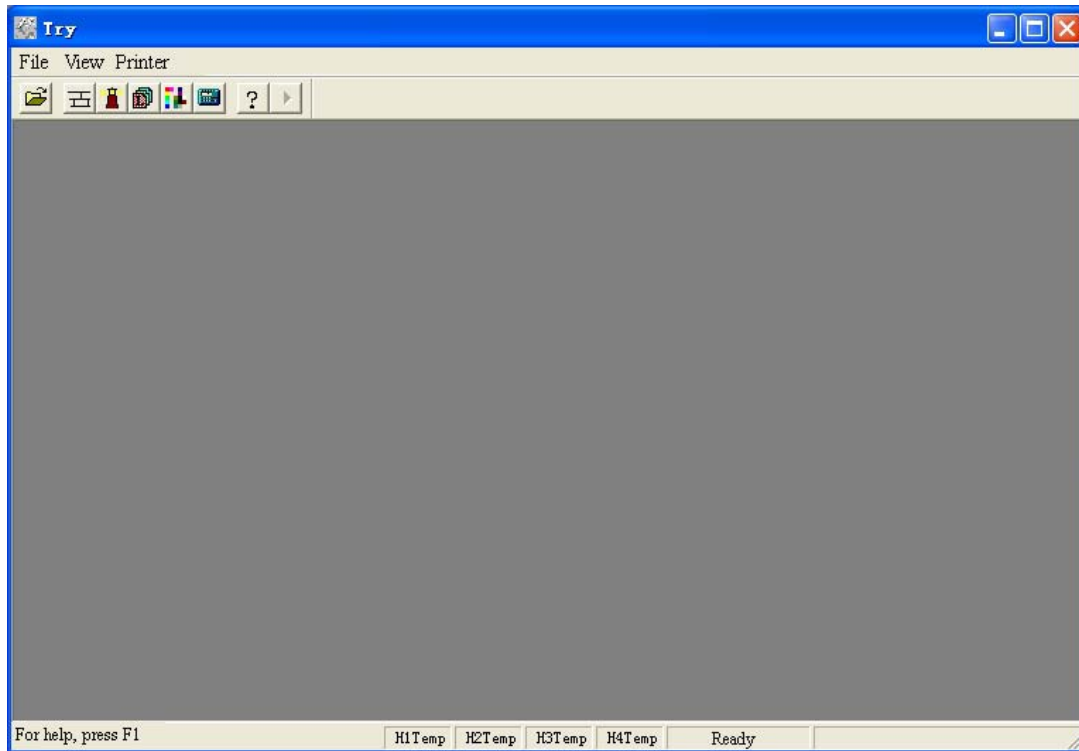

2. Open TRY

Chart 11-1 **TRY** main window

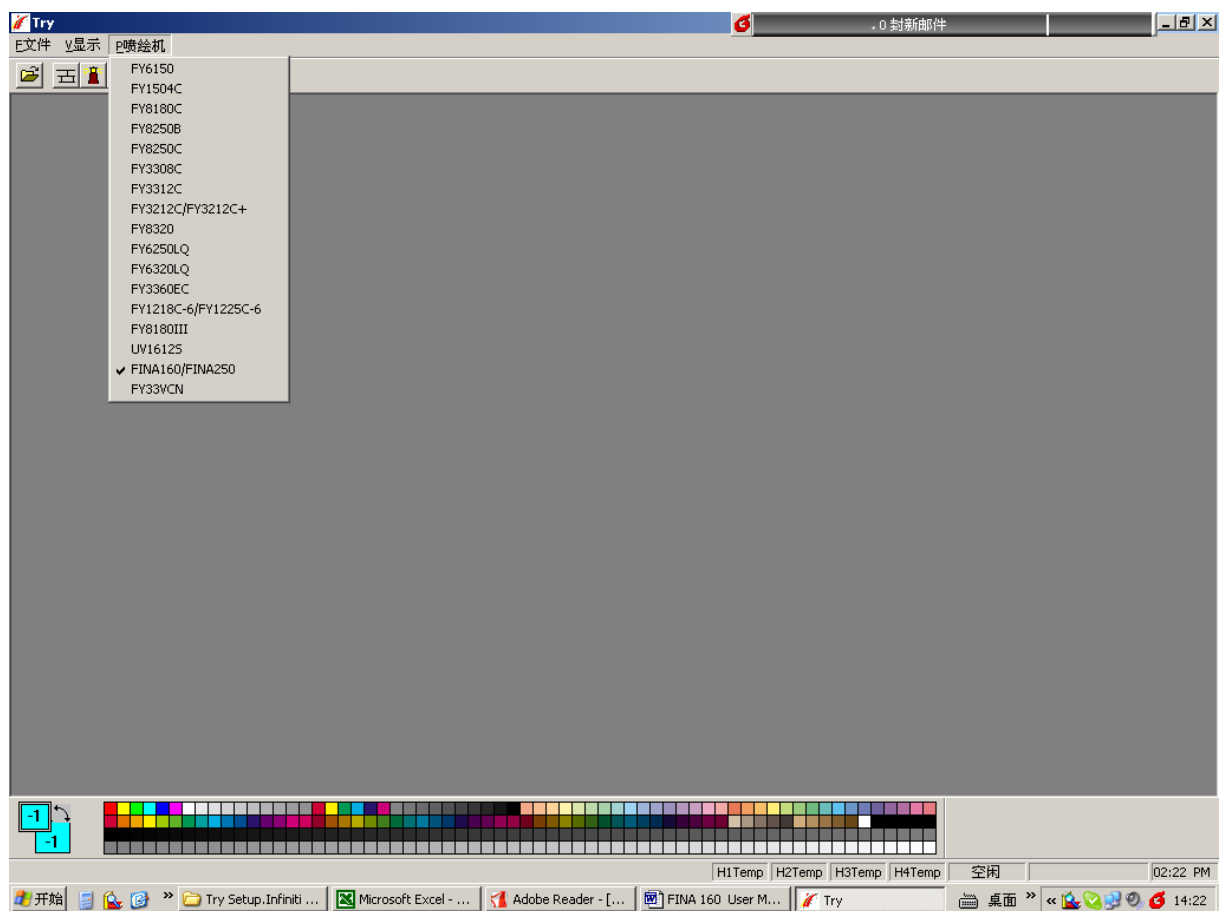3. First, choose the type of printer. Click "Printer" menu，choose the item of 160

Chart 11-2 Machine type list
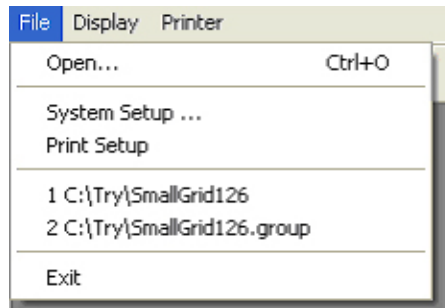
4. Then open "File" to adjust some settings.

Chart 11-3 "File" menu

In these menus, most important is print setting.
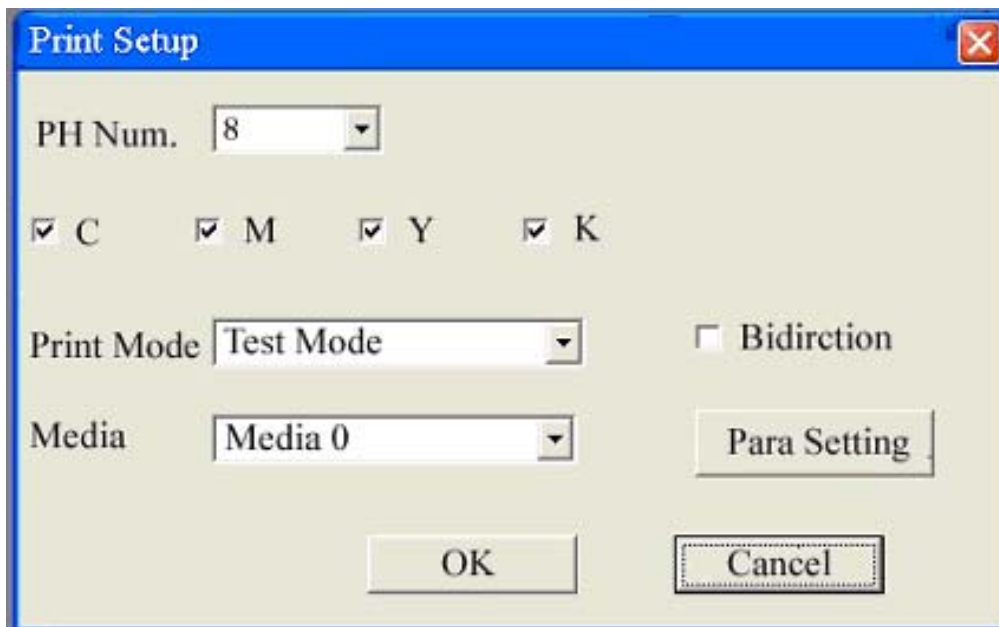
11.2.2 Print Setting

Chart 11-4 "Print setting" dialog box

This function is to set the printing parameter, print mode, uni-direction, BID and the color of ink.

Note:

Usually, the four colors should all be selected. Only when the engineer adjusts the position of head, one certain color is chosen to modify the printing parameter.

Print Mode：

Total 4 print modes for selection:

Test Mode, 360*360dpi, 360*720dpi, 720*720dpi.

Print mode description:

Test mode: 360dpi of horizontal resolution and print once in 180dpi resolution at feeding direction.

360*360dpi: 360dpi of horizontal resolution and print twice in 180dpi resolution at feeding direction.

360*720dpi: 360dpi of horizontal resolution and print 4 times in 180dpi resolution at feeding direction.

720*720dpi: Print twice in 360dpi of horizontal resolution and print 4 times in 180dpi resolution at feeding direction.

11.2.3 Printer Parameter Setting

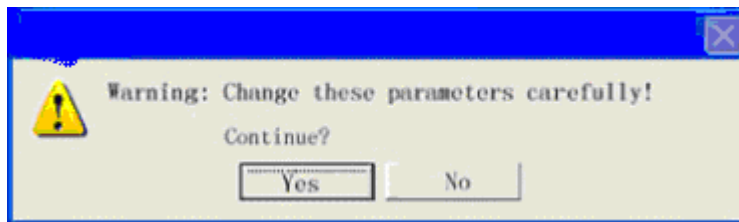Pressing "Printing parameter setting", it shows warning as below:

Chart 11-5 "Warning" dialog box

After pressing "Yes", you can see the dialogue box:

Note:

Press "load parameter" first to read the original data before adjusting.
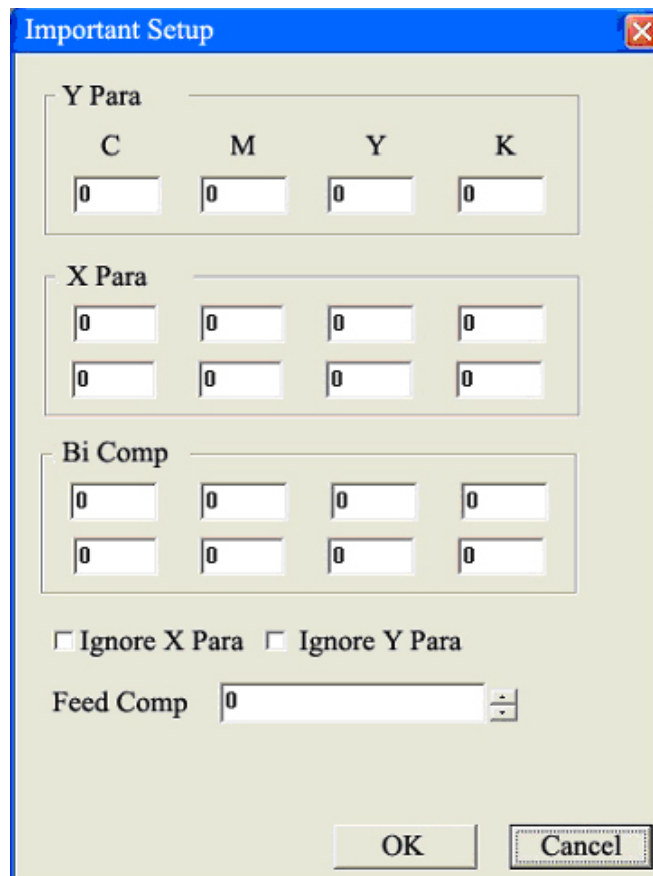

Chart 11-6 Important setup

Meaning of this dialogue box:

1. Parameter of nozzle installation:

Adjust the head position and overlapping of six colors.

Vertical space: the vertical space between print heads of all kinds color. It's used for emendating vertical space overlapping of all kinds color print heads.

Horizontal space: the horizontal space between every print head. It's used for emendating overlapping of six colors.

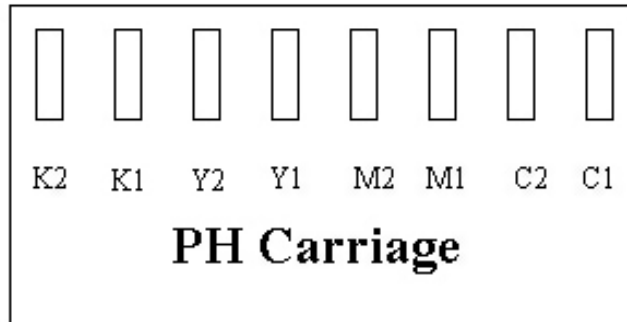The print head range chart lists as below:

Chart 11-7 Print head range chart

2. BID Rectangle: To adjust the BID rectangle tolerance value. Generally, modify BID rectangle value first in *BID adjust.* If the difference is not big, adjust here.

3. Ignore horizontal and vertical deviation: No adjustment. Only for inspect printer status.

4. Feed Compensate： Used to adjust the feeding on the Y direction. The amount of feeding is different with different Pass. After adjusting, it can correspond relevant rectangle automatically by different printing mode and media types.

11.3 Equipment adjustment

11.3.1 Print head adjustment

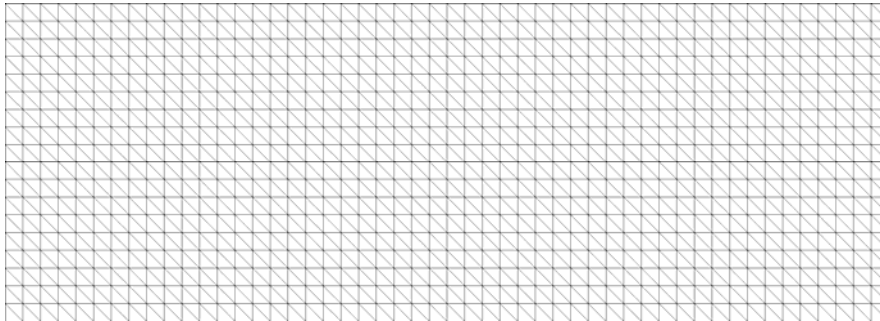Select Open/File, load the file *C:\try\SmallGrid126.group*

Chart 11-8 SmallGrid126.group

Select "Test Mode", Mono direction in "Print Setup" dialog. Check only one color if you want to adjust the parameter one head after another, or check all colors for 4 color adjusting at the same time.
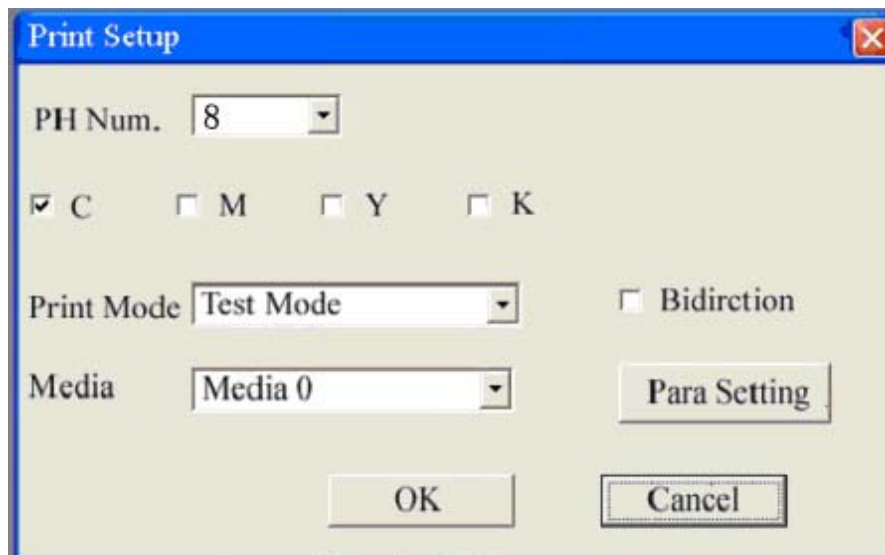

Chart 11-9 Check only Cyan for adjustment

Click Print button " ▶ " . The printer starts to print.

Check the lines on the media. In normal condition, each of the line should be straight and vertical. If the lines are not straight but inclined, adjust the inclination of corresponding head.

11.3.2 Vertical space adjustment

In this step you will adjust the vertical space of each group of the heads.

The 2 C print heads are the benchmark for all of the PHs. Check C and another color, such as M on the print setup dialog. Uncheck Bi-direction.

Chart 11-11 Check C and M for printing

Print the test picture: C:\try\4color_vertical_C.group. Check C and M on the print setup dialog and Click "" button. Printer starts to print.

Chart 11-12 Test picture of vertical space

Check the lines on the media and find the one C and M joint perfectly. Mark down the number and compensate the vertical space of the 2 M heads with this number.

Adjust the vertical compensation for other colors with the same way.

11.3.3 Horizontal space adjustment

In this step you will adjust the horizontal space of each group of the heads.

The C print head is the benchmark for all of the PHs. Check C and another color, such as M on the print setup dialog. Uncheck Bi-direction.
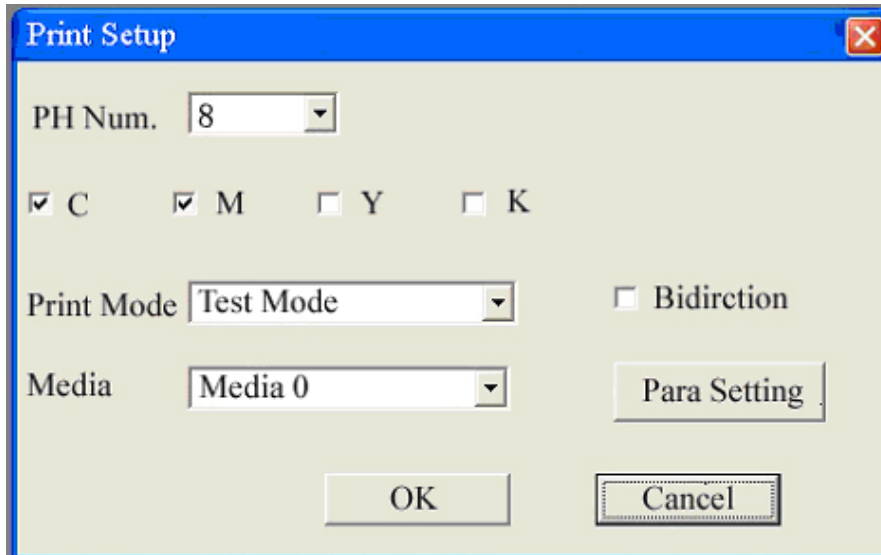
Print the test picture: C:\try\4color_overlap_C.group. Check C and M on the print setup dialog and Click " ▶ " button. Printer starts to print.

+7 +6 +5 +4 +3 +2 +1   0 -1 -2 -3 -4 -5 -6 -7

Chart 11-13 4 colors overlap

Check the lines on the media and find the one C and M joint perfectly. Mark down the number and compensate the horizontal space of the M head with this number.

Adjust the horizontal compensation for other colors with the same way.

Note:

The Vertical and Horizontal compensation of the printer are adjusted correctly before delivery in the factory. But after long distance transportation, user should adjust the parameters again if the print quality is lower than normal.

11.3.4 Feeding compensation adjustment

In this step you will adjust the feeding compensation for each print mode.

The feeding compensation is same for all colors, so check C for test and uncheck Bi-direction.

Open test picture C:\try\SmallGrid126.group and click " ▶ " button to launch the printing.

Check the dots with a microscope, you will find the dots list as bellow:
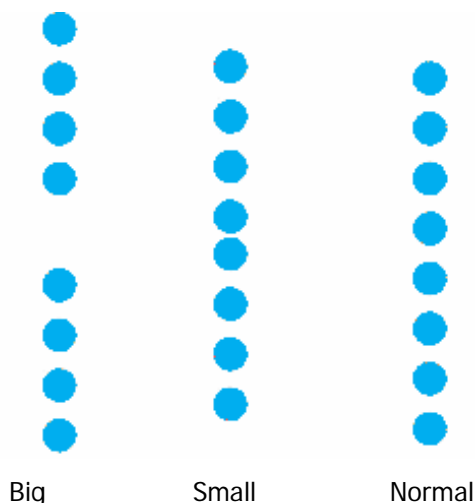

Big   Small   Normal

Chart 11-14 Print dots with different feeding compensations

If the feeding compensation sets too big, there is a gap between each pass printing. So reduce the parameter will help improve the print quality.

If the compensation set too small (maybe a big negative number), there is overlap between each pass printing. So increase the parameter will help.

The feeding compensation may be a negative number.

When the feeding compensation is set correct, the print dots should be like right picture without gap or overlap.

Note:

Feeding compensation is different from the print mode, so adjust the feeding compensation for each print mode.

11.3.5 BID adjustment

Please emendate BID printing of all print heads first on operation panel when BID adjusting. If BID printing effect of a certain print head is bad, please emendate it separately in software.

Follow below steps when BID adjusting:

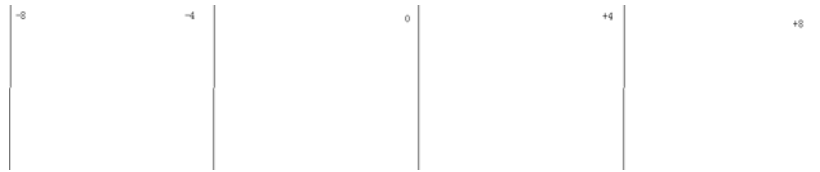1. Use TRY software to open the adjustment file *BID_test.group*.

Chart 11-15 BID_test.group

2. Press printing key [▶] to print.

3. Check the printout whether every line is straight. Then input the value in *Adjustment \ BID adjust.*

4. If some of them are straight while others not, you can input the value in dialog "Important Setup\BiComp" for each print head.

Note:

Different speed has its own BID rectangle value.

11.4 Basic operation of RIP

Refer to INFINITI RIP Manual. Please close the printer driver software before opening RIP.

Note:

You cannot open the TRY and RIP at the same time. Otherwise, there is impact between the two.

Chapter 12 Maintenance

12.1 Daily Maintenance

Daily maintenance is very important for normal workstation of the printer. Daily maintenance includes:

①**Maintenance after each printing：**
- ◆ Erasure dried ink from print head surface with flush solution；
- ◆ Restore the jammed nozzles before next printing.

②**Each 8 hours：**
- ◆ Oil the print head rail and clean the dust from it once each 8 hours.

③**Daily work：**
- ◆ Check waste ink tank, cleanup if necessary；
- ◆ Check the waste ink groove on the startup position and clean it if necessary；
- ◆ Check the sponge on the wet-keeping frame, clean or replace it if necessary；
- ◆ Clean feeding and take-up rollers with PM acetate. Skid on the rubber roller will cause error code from service and impact print quality.
- ◆ Do normal clean for the printer everyday.

④**Weekly work：**
- ◆ Clean the dust on the surface of fans on dry board. Assemble them after ensure clearness of the leafages.
- ◆ Check pump route if there is any loose.

⑤**Monthly work：**
- ◆ Clean the filters of C、M、Y and K；
- ◆ Check the tension of straps；
- ◆ Clean dust in the power tank.

⑥**yearly work：**
- ◆ Replace ink filters；
- ◆ Blower the dust on power tank with compress air；
- ◆ Clean the ink supply routes；
- ◆ Clean the liquid pumps for ink supply；
- ◆ Oil the gears of feeding and take-up motors.；
- ◆ Check whole circuit if there is any loosen or broken. Repair it in time if necessary；
- ◆ Check if there is any tear on the tube and wire in the towline set and replace it if necessary。

12.2 Maintenance of print head

Always keep the surface of print head wet with flush solution. If the printer is left unused, the print head must be dropped with flush solution and covered with fresh-keeping polyethylene films to keep it wet.

1. Moisturizing of print head：

If the printer is left unused for 2 day and above, do as below to keep the print head wet：

1、 Dip the unwoven fabric with flush solution；

2、 Cover the unwoven fabric on the surface of print head；

3、 Wrap the print head unit with fresh-keeping polyethylene film；

4、 Cover the wet-keeping frame the print head。

2 Unload print head：

Do as follows when you are going to unload print head：

1、 Pump out ink from print head and clean it with flush solution；

2、 Power off the printer and plug out power line from socket；

3、 Check static on the machine with a multimeter and release the static if necessary；

4、 Loosen the Up, Left and Right screws, and take out the right screw；

5、 Take out the print head and put it on an unwoven fabric soaked with flush solution。

3. Assemble print head

1、 Power off the printer and plug out power line from socket；

2、 Check static on the machine with a multimeter and release the static if necessary；

3、 Loosen Up and Left bolts, take out Right bolt and fix the print head to the frame；Put on Right bolt and tighten Up, Left and Right bolts properly.

4、 Connect the data cable to print head connect board one by one。

5、 Check the connection of data cables to eliminate wrong connection.。

Caution：

If the data cable is wrong connected, the print head will damage when power on.

12.3 Maintenance for ink supply system

The ink supply system is a very important. Maintenance for ink supply system is also very important. The ink supply system includes main ink tank system and assistant ink tank system with filters to separate the ink from the open air. So cleanness of environment is primary condition to place the printer.

1. Main ink tank system：

Main ink tank system consists of main ink tanks, filters, liquid pumps and waste ink tanks. Maintenance includes：

1、 Clean the main ink tanks, especially air filters, monthly；

2、 Clean or replace filters of ink and flush solution per half year；

3、 Clean around the main ink tank system weekly；

2. Assistant ink tank system：

Assistant ink tank system consists of assistant ink tanks, safety tanks and trilateral valves. Ink drops get together on the floaters in assistant ink tanks and dry to shape small balls on the top of sensors, which will impact the sensitivity of sensors. To clean the floater, do as follows：

1、 Pump out ink from ink tubes by operating on clean control panel；

2、 Unload the 4 assistant ink tanks from the back of print head unit；

3、 Loosen and take out bolts from the cover boards of assistant ink tanks and then take the cover boards and floaters；

4、 Clean the floaters and assistant ink tanks with unwoven fabric and sponge soaked with flush solution. Ensure the floater switch move smoothly and then dry floaters and assistant ink tanks；

5、 Reload floaters in assistant ink tanks and assemble assistant ink tanks on the back of print head unit。

The safety tank also needs cleanness timely. The method is same as assistant ink tank except for the 2 air filters in addition。

The trilateral valves in the ink supply system are also very important and need cleanness with flush solution timely when they are smeared by ink.

Warning:

Ink supply integration box should clean by authorized personnel only. Improper operation will result in ink supply system troubles.

12.4 Maintenance for other parts

1. Lubrication for print head rail：

As normal regulation, user should add lubricating oil to print head rail daily and never use compound oils。

1、 Add a few lubricating oil on a cotton fabric and move the print head to original position. Brush the print head rail with the cotton fabric to create an average oil layer on the rail.；

2、 Power the printer and move the print head unit left and right repeatedly；

3、 Erase the oil smear on the both ends of the rail. Erase the oil drops on the rail again before printer running。

2. Feeding and take-up rollers：

Oil the gears of media feeding and take-up rollers monthly to avoid rust。